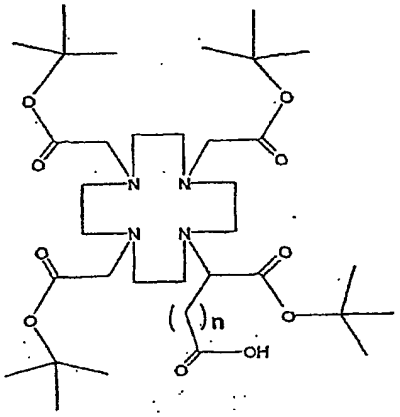
CLAIMS

1. Polyazamacrocyclic compounds for radiometal labeling, comprising an N_n system, wherein n is 4, 5 or 6, with varying ring size, and wherein at least one of the N atoms is substituted with a free carboxylate group for coupling to an amino function in a bioactive effector molecule, while all N atoms carry a protected sidechain.

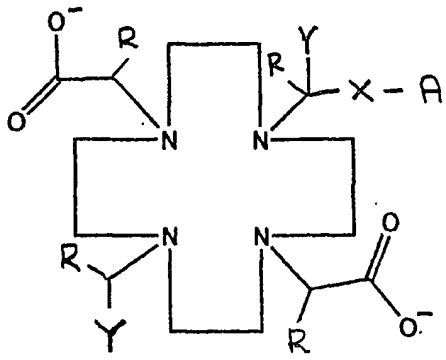
2. Compound as claimed in claim 1 having the general formula:



n = 0-5

3. Compound as claimed in claim 1 or 2, which compound is 1-(1-carboxy-3-carbotertbutoxypropyl)-4,7,10(carbotertbutoxymethyl)-1,4,7,10-tetraazacyclododecane (DOTAGA(tBu)4).

4. Chelating compounds for labeling bioactive molecules with a radiometal, having the general formula:



in which:

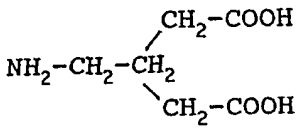
both Y groups may be positioned either trans as shown or cis;

A is an effector molecule, such as a peptide, in particular octreotide, CCK, substance P, gastrine, a protein, in particular an antibody or enzyme, sugars or radiosensitizing agents, like doxorubicin;

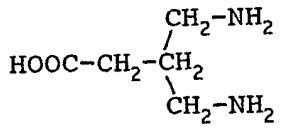
R is a hydrogen, a C_1-C_3 alkyl or a alcohol;

X is a spacer, in particular $(CH_2)_n$-X', in which n is 1-10 and X' is COOH, NH_2, SH, OH or O-halogen, in which halogen is in particular Br, I or Cl

or a molecule of the formula



or of the formula



Y is COO^-, CH_2CONH_2, CH_2CH_2OH,

optionally complexed with a radiometal.

5. Compounds as claimed in claim 4, wherein R is hydrogen, n is 1, X' is COOH, Y is COO^- and A is as defined in claim 3.

6. Compound as claimed in claim 5, wherein R is hydrogen, n is 1, X' is COOH, Y is COO^- and A is octreotide or octreotate.

7. Compound as claimed in claim 4, wherein R is COOH, n is 1, X' is COOH, Y is COO^- and A is as defined in claim 3.

8. Compound as claimed in claim 7, wherein R is COOH, n is 1, X' is COOH, Y is COO^- and A is octreotide or octreotate.

9. Compounds as claimed in claim 4, selected from the group consisting of DOTAtyr^{3}octreotide, DOTAtyr^{3}octreotate, DOTA3tyr^{3}octreotide, DOTA3tyr^{3}octreotate, DOTAt3tyr^{3}octreotide, DOTAta.13tyr^{3}octreotate.

10. Use of compounds as claimed in claims 1-3 for the preparation of compounds as claimed in claims 4-9.

11. Method for the preparation of radiometal labeled bioactive molecules, comprising the steps of:

a) synthesizing compounds as claimed in claims 1-3 having protected side chains on the N atoms and a free carboxylate group;

b) coupling a bioactive molecule to the free carboxylate group;

c) deprotecting the protected side chains; and

d) labeling the chelator structure thus obtained with a desired radiometal.

12. Compounds as claimed in claims 4-9 labeled with a radiometal for use in diagnosis and therapy.

13. Use of compounds as claimed in claims 4-9 labeled with a radiometal for the preparation of a diagnostic or therapeutical composition for treatment of various diseases.

14. Use as claimed in claim 13, wherein the radiometal label is ^{90}Y.